

**Annual/Final Report**  
**SC-U2-F15AP01096**  
**South Carolina Department of Natural Resources**  
**October 1, 2015 – March 31, 2019**  
Annual Reporting Period: October 1, 2017 – September 30, 2018

***Multistate Sandhills/Upland Longleaf Ecological Restoration Project (Phase 3)***

Submitted By:

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**Need**

Competitive State Wildlife Grants (CSWG) funds were awarded to six southeastern states within the range of the gopher tortoise (*Gopherus polyphemus*) - Alabama, Florida, Georgia, Louisiana, South Carolina, and Mississippi - in order to restore habitat and increase populations of gopher tortoise and other longleaf/sandhill wildlife. The conservation and restoration of these habitats has been identified as a critical component of the long-term persistence of the gopher tortoise and other associated species. Many of these areas have degraded due to lack of management practices and become unsuitable for many sandhill and longleaf pine associated species of conservation concern. The goal of this project is to continue work begun in 2008 and 2011 (Sandhills Ecological Restoration Phases 1 & 2) to enhance restoration efforts in these habitats. South Carolina did not participate in the previous phases and joined the project in Phase 3.

**Objectives**

South Carolina will use funds to enhance or restore historic and current Gopher Tortoise habitat, with priority being given to large fire suppressed tracts in public as well as private ownership. Restoration activities such as hardwood reduction, herbicide application, groundcover restoration, longleaf planting, and controlled burning will be used to meet the restoration/enhancement goals. Total acreage and restoration activities performed will be based on the current conditions present at the selected locations to reach the desired restoration goals.

- Significantly increase the quality and quantity of habitat for priority wildlife species in each participating state.
- Utilize prescribed fire to enhance/restore upland longleaf and sandhill habitat.

- Enhance/restore upland longleaf and sandhill habitat via invasive species removal and/or hardwood removal.
- Restore upland longleaf and sandhill habitat by planting longleaf pine.
- Restore upland longleaf and sandhill habitat by planting native groundcover.

## **Accomplishments**

During the first year of this grant we selected Tillman Sand Ridge Heritage Preserve (TSRHP) as the focal area for our restoration activities, after evaluation of numerous properties. The TSRHP is home to the largest protected population of tortoises in South Carolina and represents one of the most robust populations at the northern edge of the species' range. Additionally, TSRHP represents the highest quality habitat in a greater sand ridge complex, mostly in private ownership, and may serve as a refuge for tortoises in the area as land uses and timber management fluctuates. SCDNR conducted a Line Transect Distance Sampling survey of the TSRHP in fall 2015, and analysis of that data indicates this is a population that meets Minimum Viable Population criteria, and has the highest tortoise density known in South Carolina ( $N=232$  (95%CI: 169-320) and tortoise density of 1.43tortoise/hectare). This site represents a stronghold for tortoises in South Carolina and at the northern edge of the species' range, any activities that may increase the carrying capacity of the site may serve to buffer this species from extirpation. Additionally, providing more high-quality habitat on the greater Tillman Sand Ridge increases the ability for this site to receive tortoises displaced from adjacent lands.

Some portions of the TSRHP have not been subject to the same management practices as the major interior upland portions of the site and have experienced fire suppression. This has led to high basal areas, shading, and habitat that is not utilized by sandhill species although soils are suitable. By focusing restoration activity on these areas of the property, we hope to significantly increase the available habitat within TSRHP. After meeting with heritage preserve managers and the SCDNR forester, a plan to add additional upland/sandhill habitat to the preserve through selective cutting and fuel chipping to reduce hardwoods and lower stand basal areas was developed (Figure 1). Areas of suitable soils that had experienced fire suppression were identified for restoration with the goal being to reestablish a longleaf pine sandhill community with a diverse herbaceous native groundcover appropriate for gopher tortoises and other sandhill species.

## Tillman Sand Ridge HP - Timber Sale 2017

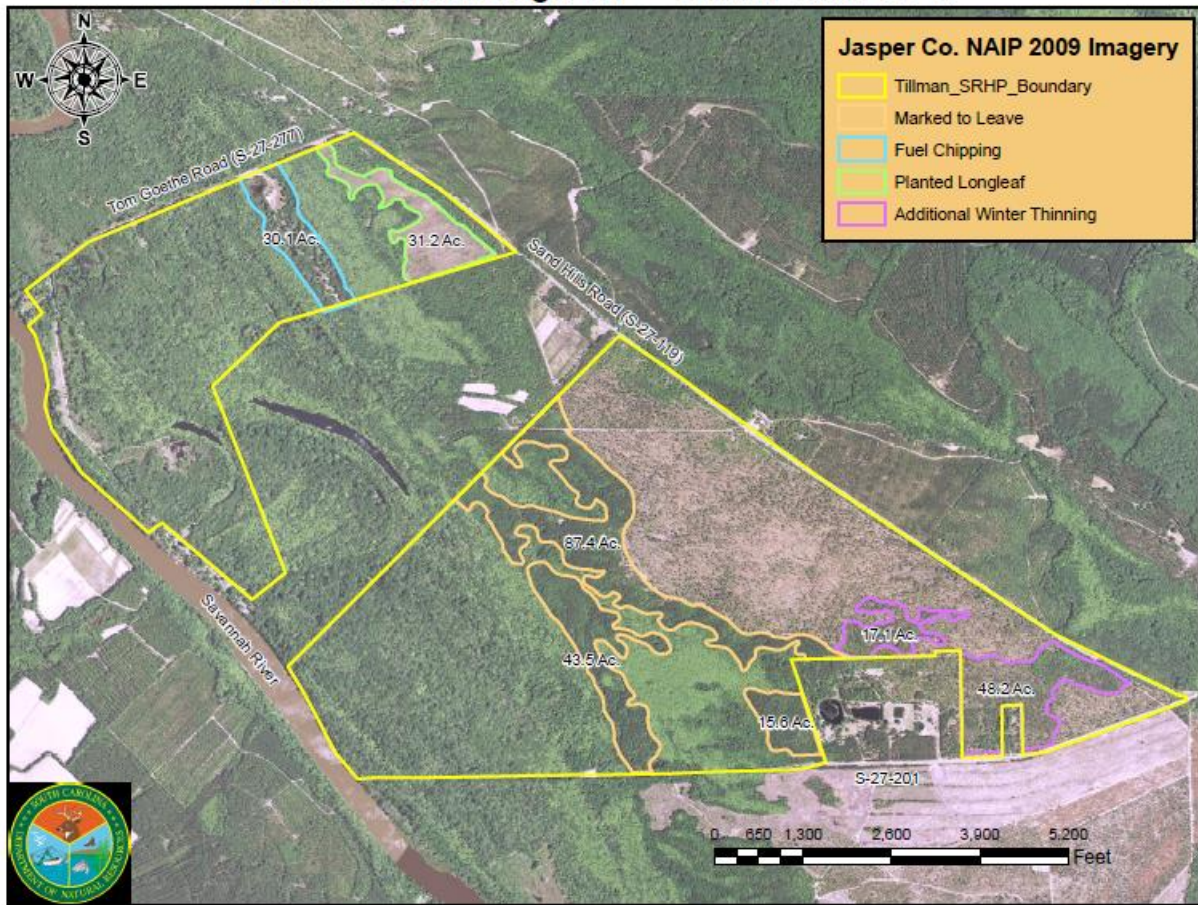


Figure 1: Restoration areas

### Year 3 (October 1, 2017 – September 30, 2018) Accomplishments

- All logging operations completed as of March 2018, including the additional winter cut encompassing 65.3 acres and tub grinding of log deck debris
- Planted approx. 100 lbs. of native ground cover seed mix on roughly 1/3 of 31 acres in planted longleaf stand, May 2018
- Installed a plot for monitoring germination of seed mix, May 2018
- Site prep burn of 31 acres before planting seed mix, May 2018
- Planted 12,000 longleaf seedlings in 43.5 acres of restoration cut area, March 2018
- Planted 200 wiregrass plugs in 43.5 acres of restoration cut area, March 2018
- Applied herbicide to 43.5 acres to control woody vegetation in restoration cut area
- Added two desired future reference plots to capture more variety of existing tortoise habitat to include one swale/wetland plot and one fire shadow plot
- 14 known “pioneer” tortoises have already moved into restoration area
- Developed plot data signage for reference pictures
- Took quarterly photos of each reference plot

Phase 4 funds have been secured under award number SC-U2-F19AP00051 and restoration work is already under way at the Tillman Sand Ridge Heritage Preserve which will build off of these Phase III accomplishments.

**Significant Deviations:** None to report.

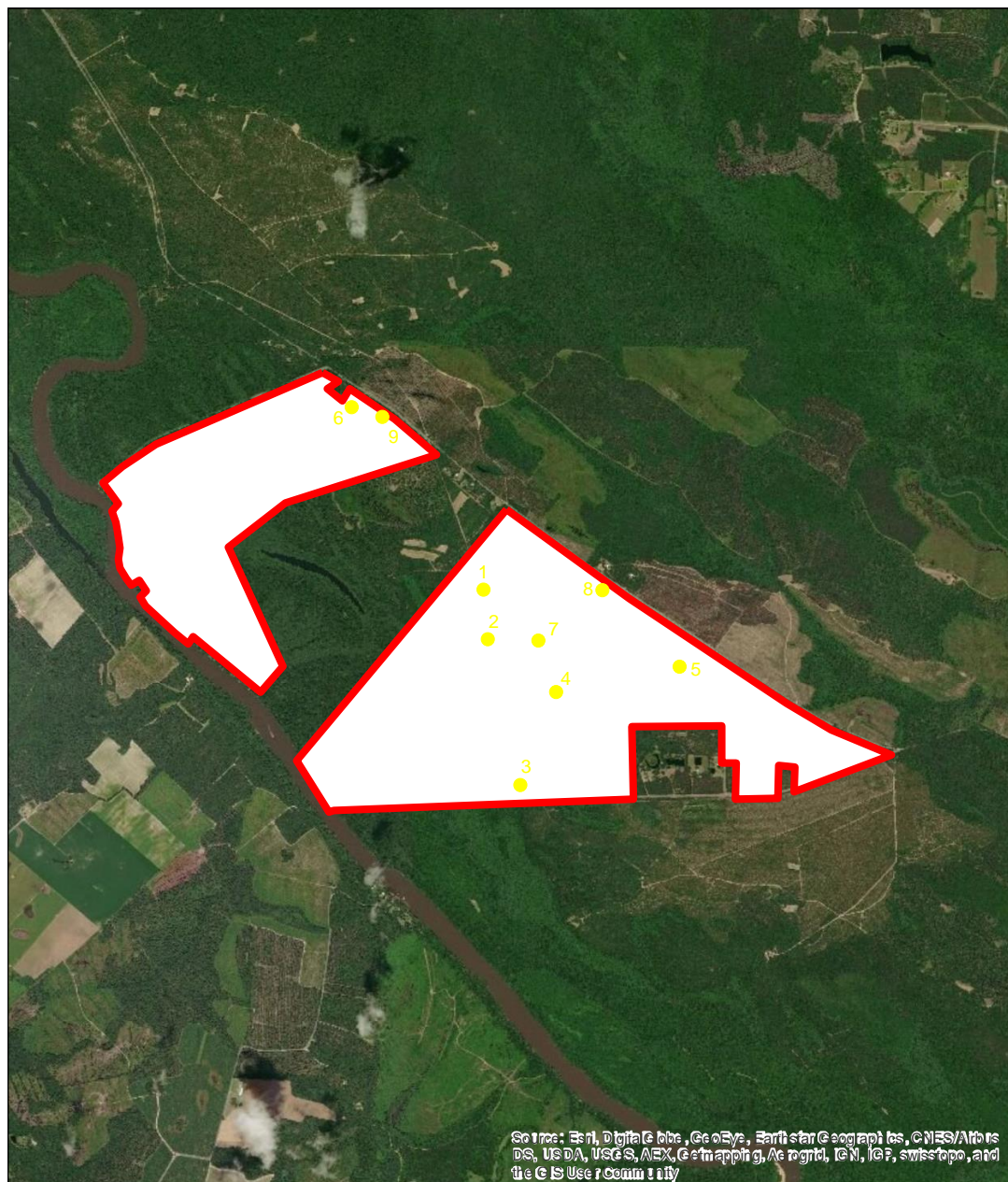
**Estimated Federal Expenditure:** \$30,000

**Recommendation:** Close the grant.

***NOTE: The individual final reports by the other partner states can be accessed by contacting those agencies.***



## Tillman Sand Ridge Reference Plot Location Pictures



0.55 0.275 0 0.55 Miles



**PLOT 1:**

Plot 1 East:



Plot 1 South:





Plot 1 West:



Plot 1 North:





**PLOT 2:**

Plot 2 East:



Plot 2 South:





Plot 2 West:



Plot 2 North:





**PLOT 3:**

Plot 3 East:



Plot 3 South:





Plot 3 West:



Plot 3 North:





**PLOT 4:**

Plot 4 East



Plot 4 South





Plot 4 West:



Plot 4 North:





**PLOT 5:** Reference Condition at TSRHP

Plot 5 East:



Plot 5 South:





Plot 5

West:



Plot 5 North:





**PLOT 6 Goethe Planted Longleaf:**

Plot 6 East:



Plot 6 South:





Plot 6 West:



Plot 6 North:





**Two additional reference plots added more recently located within interior existing GT habitat representing 1) fire shadow habitat and 2) a wet swale habitat.**

### **Plot 7 (Swale):**

**Plot 7 East:**



**Plot 7 South:**





**Plot 7 West:**



**Plot 7 North:**





## Plot 8 Fire Shadow:

### Plot 8 East:



### Plot 8 South:





**Plot 8 West:**



**Plot 8 North:**





**Goethe Seed Mix Germination Plot 9:**

